

REMARKS

Claim 1 has been amended to require that the separation tray have a plurality of primary separation devices within the inner free space, and that each of the primary separation devices is surrounded by means for removing and guiding liquid-enriched fluid which is arranged to admit all liquid-enriched fluid downwardly into the free inner space. Support for the amendments is found on pages 4 and 5 of the specification and Figs. 1, 2, 3 and 4, all of which show a separation tray with a plurality of primary separation devices each surrounded by a return skirt (i.e., a means for removing and guiding liquid-enriched fluid) which is arranged to admit all liquid-enriched fluid downward into the inner free space wherein secondary separation occurs.

Entry of these amendments is respectfully requested and deemed appropriate, since the subject Office action is the first Office action since the RCE was filed of Applicant's earlier Application No. 10/779,988. Also, the amendments are made in response to a position taken by the Examiner for the first time in the subject office action, i.e., that the absence of skirts (72) around a number of separators Figs. 6 and 7 of EP '508 which would allow the liquid-enriched fluid to flow in a direction other than downwardly is irrelevant, because the Examiner considers the any one of the individual centrally located separators of EP '508, equipped with skirts (72) to anticipate claims 1-8.

The proposed amendments are believed to address the Examiner's concerns about the breadth of the instant claims, which were raised for the first time in the subject Office action, and are believed to place the application in better form for allowance or appeal. Hence, their entry is respectfully requested.

Claim Rejections - 35 U.S.C. § 102

Claims 1-8 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by EPO 0 048 508 A2 (Figs. 6 and 7). Applicant respectfully requests this rejection be withdrawn in view of the amendments for the reasons discussed below.

In the subject Office action it is acknowledged that not all the primary separators in Figures 6 and 7 of EP '508 are surrounded by skirts 72, and therefore not all of the liquid-enriched fluid would travel downward into the inner free space. However, the Examiner considers this to be irrelevant, because claim 1, prior to the current amendments, required only a single primary separator that is fully surrounded by a skirt. The Examiner, felt that any one of the centrally located separators in EP'508, equipped with skirts (72) to prevent interference from adjacent separators, would anticipate Applicant's invention, as it was previously claimed.

While Applicant does not agree with the Examiner's position in this regard, in the interest of expediting allowance of the present application, claim 1 has been amended to require the separation tray have a plurality of primary separation devices within the inner space, and that each primary separation device be surrounded by means for removing and guiding liquid-enriched fluid, which means are arranged to admit all the liquid enriched fluid downwardly into the free inner space wherein secondary separation occurs.

While the primary reference discloses an apparatus having a plurality of primary separation devices, it does not teach surrounding each primary separation device with means for removing and all guiding liquid-enriched fluid downwardly into the free inner space. As recognized by the Examiner, and as clearly shown in Fig. 7 of the primary reference, separation chambers (63) in areas such as around the circumference of the column are not fully surrounded by skirts (72). Indeed, there is no need to have skirts in areas where there are no adjacent chambers, since the purpose of the skirts (72) is to prevent the liquid discharge from one separation chamber from hampering or interfering with the discharge from adjacent chambers (EP '508, page 9, line 34 to page 10, line 3). Thus, the primary reference clearly does not anticipate the claims as presently amended to require a plurality of primary separation devices, each surrounded with a means for removing and guiding liquid-enriched fluid, said means being arranged to admit all liquid-enriched fluid downwardly into the inner free space wherein secondary separation occurs.

Additional Arguments Why Instant Claims 1- 8 Are Not Inherently Anticipated by EP '508

In the subject Office action the Examiner did not address Applicant's arguments pertaining to the mechanism by which separation occurs in the reference relative to that in the claimed invention, because according to the Examiner the instant claims (prior to current amendments) required only a single primary separator, which the Examiner believed was taught "by at least the central separators of the embodiment of Figs. 7 and 8 of EP '508". (Applicant assumes the Examiner intended to refer to Fig. 6 instead of Fig. 8, because there is no Fig. 8 in the reference.)

Since the instant claims, as amended, no longer encompass a single primary separator, it is requested that the Examiner consider Applicants previous arguments pertaining to the differences in separation mechanisms between the apparatus in EP '508 and that recited in the instant claims, as well as the additional arguments presented below as to why claims 1-8 are not inherently anticipated by EP '508.

Applicant apologizes for any redundancy, but wants to ensure all of the reasons for patentability are considered by the Examiner in connection with the claims as presently amended.

Claims 1- 8 are not Inherently Anticipated by EP '508

Although there is absolutely no teaching or suggestion in the primary reference of using the inner free space for the separation of entrained liquid from the secondary gas, the Examiner has taken the position this may happen inherently in the apparatus depicted in Figs. 6 and 7 of EP '508, because the presence of skirts (72) would cause the liquid-enriched secondary gas to flow downward around the lower end of the skirts before flowing upward toward the secondary gas outlets (69), and that this will facilitate separation of the heavier entrained liquid from the lighter secondary gas stream. The disclosed purpose of these skirts has nothing to do with secondary separation. Instead the purpose of skirts (72) is said to be to prevent liquid discharged from separating chamber (63) from hampering the liquid discharge from adjacent chambers (EP '508, page 9, line 34 to page 10, line 3).

Even if some of the fluid-enriched liquid does initially flow downward because of skirts (72), it would be unreasonable to assume that this will result in substantial separation of the entrained liquid from the secondary gas. The degree of separation, if any, would be influenced not only by the presence or absence of skirts (72), but by other factors as well, such as flow velocities that are low enough to allow liquid entrained in the gas to coalesce and settle. (See the discussion on page 11, lines 20-31 of the present specification.) Also, as previously pointed out the separators located around the circumference of the column in EP '508 are not fully surrounded by skirts. Therefore, the liquid-enriched secondary gas leaving those primary separators would flow laterally outward from the primary separators. Thus, not all of the flow of liquid-enriched fluid in EP '508 is downward, which will undoubtedly impact to what extent, if any, separation occurs.

It is well established that in order find anticipation of a claim element or limitation through inherency, it must be clear to one skilled in the art that the element or limitation missing in the reference was *necessarily* present. *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). In the present case, because of the absence of skirts around some of the separation chambers in Fig. 7, and because the flow velocities of the liquid-enriched secondary gas is unknown, it is not at all clear that there would necessarily be a substantial separation of the entrained liquid from the secondary gas.

One cannot not reasonably assume that there would be substantial separation of entrained liquid merely because skirts (72) may cause a portion of the liquid-enriched secondary gas flow downwardly, as long as there is another portion of the liquid-enriched gas (where there are no skirts), which is free to flow in any direction. Such an assumption is also contrary to the express disclosure on page 10, lines 15-17 of the reference, that: "gas, entrained by liquid on leaving the separation chambers 63, will flow in upward direction through secondary gas outlet tubes 69." This disclosure is significant not only for its teaching of the upward flow of the secondary gas, but also for its teaching that the upward flowing gas contains entrained liquid. This would not be the case if there was substantial inherent separation of entrained liquid.

In summary, the concept of utilizing the free space between the primary separation chambers as a secondary separation zone is totally lacking in the primary reference. Moreover, such secondary separation would not necessarily happen inherently in the reference, since all of the flow of the liquid-enriched secondary gas in the reference is not downward, and since separation is also dependent on flow velocities. The fact that substantial secondary separation does not inherently occur in the reference is also supported by the disclosure in the reference that gas, entrained with liquid will flow upward through secondary gas outlet tubes 69.

For all the foregoing reasons, it is submitted that claims 1-8, as presently amended, are not anticipated by EP '508. Accordingly, the rejection of claims 1-8 based on this reference should be withdrawn, which action is respectfully requested.

Claim Rejections - 35 U.S.C. § 103

The rejection of claims 9-14 under 35 U.S.C. § 103(a) as being unpatentable over EPO 0 048 508A2 taken together with Sheinman is respectfully traversed.

In view of the amendments and for the reasons discussed above, EP '508 (Figs. 6 and 7) does not substantially disclose Applicant's invention as recited in claims 9-14. More specifically, EP '508 does not teach nor suggest a plurality of primary separation devices wherein each primary separation device is surrounded with means for removing and guiding liquid-enriched fluid, and wherein said means is arranged to admit all liquid-enriched fluid downwardly into the free inner space wherein secondary separation occurs. Since claims 9-14 are dependent claims, which directly or indirectly depend from claim 1 which contains the aforesaid limitations, the subject matter of claims 9-14 is not obvious from the primary reference.


The secondary reference, Sheinman, concerns an improved heat-mass exchange system. It is not remotely related to apparatuses for separating gases and liquids. While

Sheinman may disclose some of the specific features recited in claims 9-14, it does not teach or reasonably suggest the features that are missing in the primary reference, i.e., a plurality of primary separation devices wherein each primary separation device is surrounded with means for removing and guiding liquid-enriched fluid, and wherein said means is arranged to admit all liquid-enriched fluid downwardly into the free inner space wherein secondary separation occurs. Since the aforementioned features are not taught or reasonably suggested by either of the references, claims 9-14 are believed patentable over EP '508 alone or in combination with Sheinman. Accordingly, the rejection of these claims under U.S.C § 103(a) should be withdrawn.

For the reasons discussed above and in view of the amendments, all of claims 1-14 of the present application are believed to be patentable over the cited references. Accordingly, it is respectfully requested that a Notice of Allowance be issued in this case.

Respectfully submitted,
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